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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ROBINSON, KEITH O NEAL	
ART UNIT	PAPER NUMBER
1638	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/708,724	DUNCAN ET AL.	
	Examiner	Art Unit	
	Keith O. Robinson, Ph.D.	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *9-15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,16 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's appeal brief, filed September 12, 2007 has been received and entered in full; however, prosecution for this case has been re-opened after consultation with Applicant's representative, Robert Hanson, on December 10, 2007 and thus, the finality of the rejection of the last Office action, mailed January 4, 2007, has been withdrawn.

   Claims 1-8, 16 and 17 are under examination.

Response to Arguments

2. Applicant's arguments, see pages 2-4 of the Appeal Brief filed September 12, 2007, with regard to the 35 USC § 102 rejection of claims 1-8, 16 and 17 on pages 2-3 of the Office Action mailed January 4, 2007, have been considered in full and found persuasive. The rejection has been withdrawn.

Claim Rejections - 35 USC § 112, second paragraph

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

   > The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is indefinite because it is dependent upon itself.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-8, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reichert et al (U.S. Patent No. 6,140,555, October 31, 2000), in view of Saxena et al (U.S. Patent No. 5,477,000, December 19, 1995). The claims read on a method of obtaining transformable callus tissue comprising germinating a mature corn seed in tissue culture media containing an effective amount of an auxin and an effective amount of a cytokinin to produce a growing seedling containing a nodal section; isolating said nodal section from said seedling; and culturing said nodal section to produce embryogenic callus suitable for transformation.
7. With regard to claim 1, Reichert et al teach methods for obtaining transformable callus tissue (see, for example, column 2, line 59 to column 3, line 5 where it teaches that immature zygotic embryos can be used as explants for callus cultures and Table 1 where it lists several references that teach methods for obtaining

transformable callus tissue); isolating nodal section from corn seedling (see, for example, column 3, line 60 to column 5, line 3 where it teaches "[s]eedling nodal tissues from inbred B73 were excised from...seedlings"); and culturing nodal sections on induction media to produce embryogenic callus suitable for transformation (see, for example column 10, line 65 to column 11, line 15, where it teaches "[n]odal section explants are placed on corn shoot induction medium"; column 10, lines 45-47 where it states, "explants are also used as targets in a biolistics-based transformation system". One of ordinary skill in the art would appreciate that embryogenic callus could also be used in a biolistics-based transformation system). Reichert et al teach media suitable for producing embryogenic callus (see, for example, column 2, line 59 to column 3, line 5 and Table 1 where it teaches "[r]egeneration was a result of scutellar tissue proliferation which lead to the formation of embryogenic callus from which mature bipolar somatic embryos emerged and subsequently, regenerated into whole plantlets". In addition, Table 1 teaches various media suitable for producing embryogenic callus.

8. Reichert et al teach isolating the nodal section from the seedling (see column 3, lines 62-63 where it teaches "[s]eedling nodal tissues from inbred [corn] were excised"); Reichert et al teach culturing nodal section on induction media (see, for example column 10, line 65 to column 11, line 15, where it teaches "[n]odal section explants are placed on corn shoot induction medium"); see column 17, line 46 to column 18, line 14 where Reichert et al teach transforming the callus with a nucleic

acid sequence and selecting transformed callus cells; see column 21, line 52 to column 22, line 6 where Reichert et al teach regenerating a transformed plant.

9. Reichert et al do not teach germinating mature corn seed in tissue culture media containing an effective amount of auxin and an effective amount of cytokinin to produce a growing seedling containing a nodal section, nor does Reichert et al teach a solid medium.

10. Saxena et al teach germination of mature seed in tissue culture media containing an effective amount of auxin and an effective amount of cytokinin (see, for example, the 'Abstract' where it teaches, "viable regenerants can be produced by culturing an intact plant seed...in the presence of cytokinin and/or auxin growth factors". Also see, for example, column 7, lines 30-35, where it teaches, "growth regulators used in the medium may be one or more components selected from any one group or components mixed and selected from two or more of the above listed groups [wherein the above listed groups lists examples of cytokinins and auxins (see column 7, lines 7-29)]). Finally, see, for example, column 7, lines 65-66 where it teaches, "[t]he use...of an auxin and TDZ [a cytokinin] are effective as well."). Thus, one of ordinary skill would appreciate that mature seed can be germinated on media containing both an auxin and a cytokinin.

11. With regards to claim 2, Saxena et al teach "growth regulators may be selected from several known growth regulators (see column 7, lines 14-15). It would have been obvious to one of ordinary skill in the art that any auxin and any cytokinin or a combination thereof could be used as growth regulators a in the tissue culture

media. Saxena et al teach growth regulators used in the medium may be one or more components selected from any one group or components mixed and selected from two or more of the above listed groups [wherein the above listed groups lists examples of cytokinins and auxins] (see column 7, lines 7-29). BAP and picloram were known growth regulators. See, for example, page 7, paragraph 0027 in the specification where it is taught that picloram is a commonly used auxin and BAP is a commonly used cytokinin.

12. With regard to claim 3, see column 3, line 67 to column 4, line 1, where Reichert et al teach the picloram concentration of 3.0 mg/L, which is between about 0.5 mg/L and about 20 mg/L. It would have been obvious to one of ordinary skill in the art that picloram could be used in a germination medium at various concentrations because Saxena et al teach "growth regulators may be selected from several known growth regulators (see column 7, lines 14-15). One of ordinary skill in the art would have appreciated that growth regulators were used for germinating seed. In fact Saxena et al teach that all known growth regulators have the ability to promote shoot development (see column 7, lines 13-16).With regard to claim 4, see column 5, line 55 where Reichert et al teach a BAP concentration of 2.0 mg/L, which is between about 0.1 mg/L and 10 mg/L.

13. With regard to claim 5, see column 7, lines 7-13 where Saxena et al teach a solid culture medium. One of ordinary skill in the art would appreciate that media containing gelrite or agar would be solid.

With regard to claims 6 and 7, see column 5, lines 52-56 where Reichert et al teach nodal section obtained from seedling 7 days after germination.

With regards to claim 8, see column 17, line 46 to column 18, line 14 where Reichert et al teach transforming the callus with a nucleic acid sequence and column 21, line 52 to column 22, line 6 where Reichert et al teach regenerating a transformed plant.

16. With regard to claim 16, see, for example, column 8, lines 11-16, where Saxena et al teach the surface sterilization of seeds. One of ordinary skill in the art would appreciate that such a step could be interpreted as priming a seed. Also Saxena et al teach germination of mature seed in tissue culture media containing an effective amount of auxin and an effective amount of cytokinin (see, for example, the 'Abstract' where it teaches, "viable regenerants can be produced by culturing an intact plant seed...in the presence of cytokinin and/or auxin growth factors". Also see, for example, column 7, lines 30-35, where it teaches, "growth regulators used in the medium may be one or more components selected from any one group or components mixed and selected from two or more of the above listed groups [wherein the above listed groups lists examples of cytokinins and auxins (see column 7, lines 7-29)]). Finally, see, for example, column 7, lines 65-66 where it teaches, "[t]he use...of an auxin and TDZ [a cytokinin] are effective as well.").

14. Reichert et al teach isolating nodal section from corn seedling (see, for example, column 3, line 60 to column 5, line 3 where it teaches "[s]eedling nodal tissues from inbred B73 were excised from...seedlings"). In addition, Reichert et al teach culturing nodal section on induction media (see, for example column 10, line 65 to

column 11, line 15, where it teaches "[n]odal section explants are placed on corn shoot induction medium").

15. With regard to claim 17, see, for example, column 8, lines 11-16, where Saxena et al teach the surface sterilization of seeds. One of ordinary skill in the art would appreciate that such a step could be interpreted as priming a seed. Also Saxena et al teach germination of mature seed in tissue culture media containing an effective amount of auxin and an effective amount of cytokinin (see, for example, the 'Abstract' where it teaches, "viable regenerants can be produced by culturing an intact plant seed...in the presence of cytokinin and/or auxin growth factors". Also see, for example, column 7, lines 30-35, where it teaches, "growth regulators used in the medium may be one or more components selected from any one group or components mixed and selected from two or more of the above listed groups [wherein the above listed groups list examples of cytokinins and auxins (see column 7, lines 7-29)]). Finally, see, for example, column 7, lines 65-66 where it teaches, "[t]he use...of an auxin and TDZ [a cytokinin] are effective as well.").

16. See column 3, lines 62-63 where Reichert et al teach isolating the nodal section from the seedling ("[s]eedling nodal tissues from inbred [corn] were excised"); Reichert et al teach culturing nodal section on induction media (see, for example column 10, line 65 to column 11, line 15, where it teaches "[n]odal section explants are placed on corn shoot induction medium"), see column 17, line 46 to column 18, line 14 where Reichert et al teach transforming the callus with a nucleic acid

sequence and selecting transformed callus cells; see column 21, line 52 to column 22, line 6 where Reichert et al teach regenerating a transformed plant.

17. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the teachings of Reichert et al with those of Saxena et al to produce the claimed method because Reichert et al teach a method of transformation using the nodal region of seedlings from immature zygotic embryos and mature seed, but states that 'mature seeds would...aid transformation efforts due to the abundance of mature seeds year-round and the ability to store them until needed (see column 38, lines 58-62) and Saxena et al teach germination of mature seed in tissue culture media containing an effective amount of auxin and an effective amount of cytokinin. Thus, the combined teachings would have provided a more effective method of transformation.

One of ordinary skill in the art would have been motivated to combine these teachings because Saxena et al teach "seed can be placed in the culture medium for purposes of regeneration which can translate into considerable savings in time, labour and overall cost of production...[t]his feature, in combination with the significant outcrop of 10 to 20 fold greater number of regenerants, provides a significant increase in processing efficiency to prepare plants from a single seed" (see column 6, lines 16-22).

In addition, one of ordinary skill in the art would have had a reasonable expectation of success based on the success of Saxena et al in regenerating plants using mature seed in tissue culture media.

Conclusion

18. No claims are allowed.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith O. Robinson, Ph.D. whose telephone number is (571) 272-2918. The examiner can normally be reached Monday – Friday, 7:30 a.m. - 4:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached at (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keith O. Robinson, Ph.D.

December 10, 2007

ANNE MARIE GRUNBERG
SUPERVISORY PATENT EXAMINER